U.S. Army Corps of Engineers
Newburgh Regulatory Office
Attn: Sam Werner, Regulatory Project Manager
6855 State Route 66
P.O. Box 489
Newburgh, Indiana 47629-0489

RE: Vigo Sunna Mine
Pike County, Indiana
LRL-2011-1055-sew
Response to PN Comments

Dear Mr. Werner;

This letter is in response to the Public Notice comments received concerning the proposed Vigo Sunna Mine site in Pike County. They are listed by identified agency or other entity title and in the order as presented.

U.S. EPA (Region 5)

Direct Impacts:
A table is provided similar in format to the "Impacts Summary", but with the type of impact listed for each resource. It was found, during the table development, several intermittent streams that were avoided had been listed as impacted. The updated intermittent impacts total 28,919 feet (down from 31,452 feet). An updated avoidance table has been developed and submitted as well.

Cumulative Impacts Analysis:
The CIA has been updated to reflect current mining activities in the county. It appears that the writer did not access the proper data base in development of the CIA, but it should also be noted that several of the current mine sites were apparently in permitting phase and were not active at the time the original CIA data was being researched, while other sites had been inactive. Several of the permitted mines lie on the border of the HUC-11 and could have been inadvertently overlooked.

Avoidance and Minimization:

The final avoidance tally for streams has been updated (see discussion above regarding Direct Impacts) and should now be 43,421 feet of stream. A new table of avoided resources is submitted.

We believe Vigo Sunna has taken extraordinary measures to avoid and minimize impacts within the proposed permit boundary; avoiding approximately 430 acres of the 1496-acre site (29%) and utilizing many existing ponds or pits for sediment control. It should be noted that the majority of Stendal Road (Hwy 257) within the project limits will have no visible mining activity along one or both sides of the roadway. Only a short section (approximately 740 feet) will have mining activity within 100 feet of both sides the road right of way.

In a larger sense, by mining an area which has been previously disturbed pre-SMRCA, Vigo Sunna has avoided impacting other sites that probably contain much higher quality and undisturbed resources.

Mitigation:

Monitoring

Biological baseline data has been developed, through stream assessments, a fish and macroinvertebrate survey, and water quality testing at key downstream discharge points per NPDES and COE requirements. The current monitoring plan appears to address concerns over determining whether stream and wetland mitigation is proceeding towards success during the monitoring period, as well as identifying any potential water quality issues during mining (NPDES water sampling/reporting requirements). Any problems associated with mitigation and/or water quality would be identified and required to be remediated. As proposed, the monitoring period is five years, **unless** success is met in less time. More recently, the COE has asked that the "unless..." phrase be removed from other mitigation monitoring proposals; we anticipate this will be done in this instance as well. If deemed necessary Vigo may propose to perform a biological survey as part of the final monitoring report when success has been determined and a request for release from further monitoring is to be made.

Adaptive Management Plan

Since Indiana does not have an in-lieu fee program for compensatory mitigation needs, and information on available stream mitigation banks for the area could not be found, it appears to leave the applicant but two choices; work towards successful on-site mitigation or go off-site. The AMP does clearly refer to the success criteria and the goals to be met, which has triggers for identifying potential problems noted in the criteria. Additional criteria for monitoring and action triggers are outlined in the Project Performance Evaluations section found immediately after Adaptive Management. We believe the goals and evaluations required for each goal are sufficient to assure progress towards successful mitigation.

Financial Assurances

The SMRCA bond release process is a phased approach. When the mined ground has been graded to final contour, has had sub-soil and topsoil replaced to the appropriate depths, and has been initially seeded; 60% of the total bond applied to that acreage is

released. Once the area has achieved successful vegetative ground cover and tree seedlings have survived at the approved rate per acre, another 25% or the bond for the affected acreage is released. Finally, after 5 years from the date of initial seeding, providing that there have been no detrimental developments, the remaining 15% of the total bond can be released. While it is true that the SMRCA and Section 404 performance standards are not exactly the same, they do complement each other. The initial construction of the wetlands would occur prior to the first phase of bond release. The wetland area will be graded as described in the approved Section 404 mitigation plan, soils replaced as described, and the wetland acreage seeded with the seed mixture that has been approved in the mitigation plan. Likewise, prior to the second phase of bond release, approved species of tree seedlings will be planted at the appropriate rate to achieve the required number of surviving trees per acre. At this point, the majority of the work to establish the mitigated wetlands has been accomplished, and there would still be 15% of the original bond amount held as security for performance. As mentioned previously, this bond would remain in place for a minimum of five years and could remain for at least six or seven years from the initiation of mitigation efforts. This coincides with or exceeds the five year monitoring period suggested by EPA.

Long-Term Protection

All wetland mitigation sites will be protected by deed restrictions or conservation easements in perpetuity, to be executed after completion of the mitigation construction. The deed restrictions or conservation easements for wetland mitigation areas will be recorded within 60 days after mitigation construction is complete. It should be noted that several landowners have agreed to the establishment of wetlands on their property, specifically for wildlife enhancement purposes; an indication that future development for disturbance of the site should not be anticipated.

For streams, the applicant will provide an appropriate real estate instrument or other mechanism that provides long term protection of the compensatory stream mitigation sites within 60 days after the mitigation construction is complete. This protection may be in the form of a real estate instrument where private land owners agree to execute said instrument. For some privately owned properties, long term protection may be compliance with the laws set forth in Section 404 CFR for "waters of the U.S." and protection of the riparian buffers by inclusion in the Indiana Classified Forest and Wildlands Program (where eligible). For other privately owned properties, long term protection may be notification and compliance with the laws set forth in Section 404 CFR for "waters of the U.S."

US Fish and Wildlife Service

Comments in the introductory paragraphs:

We are not sure how they want project impacts quantified. Each resource is located, described, and its assessment discussed in the baseline report. Each impact is listed in tables as to length or acreage, and how it is to be mitigated in the mitigation section of the application. We have now listed the impact as to "type" for EPA which is available to everyone if requested.

The intermittent streams are to be replaced based on natural channel design with riparian zones reestablished. More intermittent stream length is to be created than impacted due to restoring the abandoned open pit areas back to a more natural condition of valleys with streams and wetland areas.

Sediment Control Structure S4 (the designation number is omitted in this letter, but was included in the comment letter USFW submitted to IDNR) is in fact located as far upstream as practical. During the process of designing the location and configuration of the pond, not only was meeting the required engineering and hydrological specifications considered, minimizing the impacts to the stream channel was also considered.

It is not surprising that acid mine drainage may be an issue given the complete lack of reclamation, open pits, and spoil piles found on site. The re-mining and reclamation of the site should alleviate problems associated with acid forming materials currently exposed to air and water. Many of the existing spoil piles will be re-graded and covered with a minimum of 24 inches of non-toxic "best available material". Additionally, the open pits that collect runoff from adjacent un-reclaimed spoils will be filled and eliminated. Both of these actions should significantly reduce the potential for the development of Acid Mine Drainage.

There has in fact been a fish and macroinvertebrate survey completed at key points around the site, including streams which drain toward Houchin Ditch. This information can be made available to USF&WS if requested. In general, the findings indicate that all streams (including those draining toward Houchin Ditch) were classified as moderately to severely impaired based on Indiana metrics for family-level tolerance values.

Mitigation Plan:
The only issue appears to be the ratio used for emergent wetland mitigation. The ratios used were typical of other project proposals accepted by the COE and other reviewing agencies (including other USF&WS field offices). It should be noted that Vigo is putting back all wetlands impacted as palustrine forested, at a slightly higher acreage than what was calculated to be required. We believe this will provide a higher quality of wetlands over the existing emergent wetlands that developed primarily along old mining pits and ponds that exist due to pre-SMRCA mining activities.

Endangered Species:
A comprehensive Indiana Bat Protection and Enhancement Plan (PEP) was included in the S-369 Indiana Department of Natural Resources permit application (a copy of the PEP is attached to this letter). This plan has been approved by the IDNR Division of Reclamation, and contrary to the statement made by USFW in this letter, the plan has been forwarded to USFW by the Division of Reclamation.

Indiana Department of Natural Resources

All of the resources proposed to be impacted that are included in the LRL-2011-1055-sew project have been cleared for disturbance (see attached letter from the IDNR staff archeologist). The "Need Information" area cross hatched on the map included with the IDNR comment letter delineates one tract of land that is not included in the S-369 permit boundary and another tract where Vigo Sunna does not currently have right of entry. No impacts are currently proposed on those tracts in this application.

Jace Houchin (property owner)

Mr. Houchin indicates other property owners did not properly receive notification. Without hearing from those owners, we are unsure what obligation Vigo Sunna has in this matter. Vigo has mailed the public notice to three additional owners that could perhaps be construed as "adjacent" and advised the owners of their opportunity to provide comments to ACoE. To date no additional comments have been forwarded to Vigo Sunna for consideration. The other concerns are more an issue with the review that has been undertaken by IDNR for the surface mining permit. These concerns do not address aquatic resource impacts.

Conservation Law Center (CLC)

The commenter interjects many of the same statements in more than one "Comment" section, perhaps in an attempt to add "bulk" to their comment letter, so we have attempted to address comments in some semblance of the order presented without repeating responses.

Practicable Alternatives (Comments I.A,I.B,I.C):
In presenting alternatives, the applicant is charged with presenting options that may or may not be available or practicable based on a variety of reasons, but at least show that those options were explored or discussed. In doing so, the applicant has to also be aware of the economics involved in each option. While environmental concerns are taken into account, dismissing the economic factors of both the mining operation and its influence on local economies is unreasonable. Of the options discussed in the alternatives analysis, the CLC has directed attention to pod mining and the two reasonable alternatives, which leads one to assume they agree that underground, highwall, and auguring are unsuitable based on the submitted discussions. Although a detailed discussion on this mining method was not presented, pod mining is seldom, if ever, used for the reasons listed in the alternatives analysis. Except for some of the previously mined areas, the dendritic pattern and dispersal of streams over the site make this method impracticable to access the coal seams while avoiding streambeds. Pod mining is essentially open pit mining without the benefit of continuous backfill. When you open the pits, you must have an area(s) available to place the overburden for temporary storage. This area must be large enough to stack the overburden in a manner that is stable and not subject to sluffing or sliding, and in many instances, requires a larger surface area for storage than the pit that is being excavated. As close together as many of the streams are on the Vigo Sunna site this would be very difficult,

if not impossible. It also requires constant moving of equipment from pod to pod and from pods to the overburden storage areas so there would likely be construction of more haul roads while still attempting to avoid stream impacts. Excavating a large number of pits and constructing the associated overburden storage areas would likely alter watershed hydrology, resulting in indirect impacts that could decrease the functions and values of the aquatic resources being directly avoided; all of which limits the viability of the site for extraction from the economic standpoint as well. As instructed by the USACE at a workshop called *Conducting an Alternatives Analysis For Regulatory Permits*, "reasonable alternatives do not include remote or speculative alternatives...but do include those that are practical or feasible from a technical or economic standpoint based on common sense". Pod mining does not meet the "reasonable" test. Regarding the comment of trying to avoid mining through fewer intermittent streams and fewer acres of wetlands, it should be noted that most of the existing pits (open waters) were once intermittent or perennial stream, and a large majority of them will be returned to a more natural pre-disturbance condition as intermittent streams. Several other existing intermittent streams, such as INT-43 and INT-44, developed over time on unclaimed mined lands and exhibit less than desirable conditions for habitat (high conductivity and low RBP scores). Many other larger existing intermittent streams are being avoided to a large degree (i.e., INT-22, 24, 31, 41, 53). The wetlands found during the baseline study were mostly small and associated with existing pits, ponds, or depressions left from the previous mining activity. We feel the mitigation effort, with consolidation into larger wetlands post-mining, will enhance wildlife habitat and benefit the area.

The two practicable options are indeed different in the amount of impact due to avoidance areas, but also by the addition of augur mining under some of the avoided surface area. Augur mining allows Vigo Sunna to extract coal without increasing impacts proposed for Configuration 2. Vigo Sunna could attempt to surface mine the entire site under Configuration 1, but on further review and investigation, chose to set aside areas for avoidance that are less economical to mine by that method, are economical to mine by auguring, and reduces impacts that would require mitigation (another economical consideration).

The public notice is adequate. Digital copies of all sections of the application, including the PCN and mitigation report, are available for public review and inspection. The application is very specific in discussing, listing, and exhibiting the avoidance and minimization of resources; as well as providing details on mitigation efforts.

Water Quality (Comments II.A., II.B.,II.C.,II.D.):
Baseline water quality analysis was conducted for the NPDES and IDNR permit applications. This information was provided to the USACE, along with pertinent water quality data obtained from the major receiving streams, in a discussion of the sampling results. Additionally, water quality was discussed in the CIA, along with other sampling results obtained from data bases covering those major streams, as to existing impairments and how past and proposed mining may be related. The data search and discussion was based on information available at the time (2011). The 303d list provided was intended to indicate those streams with impairments that may, or could,

be linked with surface mining, past or proposed. The fact that Cup Creek is listed for *E. coli* did not appear pertinent to the discussion and is most likely related to sewage discharges or livestock pasturing in the watershed. Since little of the Vigo Sunna permit area is currently used for livestock purposes and there was no indication of a sewage discharge within the permit limits, addressing the issue of *E. coli* did not appear relevant to the discussion. A discussion of water quality testing results was submitted to the USACE with a comparison to available data obtained from EPA STORET sites. In general, results for parameters associated with South Fork Patoka River and Patoka River listed impairments show that existing water quality on-site is very similar to those receiving streams.

For other comments about the projects impact on water quality and hydrology we offer the following discussion. The applicant, IDNR, COE, and THE, are aware that all discharge points from the permit site will be periodically monitored and tested, with the results being forwarded to proper regulatory agencies for review and possible remediation (if necessary). Vigo Sunna has performed required baseline surface and groundwater analysis and established monitoring points as required for a surface coal mining permit. It is still our contention that the mitigation proposed, along with the proposed reclamation efforts will result in water quality improvements over the existing conditions in which streams have developed over time flowing flow through un-graded spoils and other un-reclaimed lands. This situation is similar to the challenges abandoned mine land agencies face in their efforts to improve water quality at pre-law sites around the country. Hydrologic output from the site would not be significantly altered since the majority of the discharge from the site resulting from runoff would continue to be from structures left in place for sediment and discharge control (i.e., SS#10 (Fox Pit), SS#3 is an existing pond). The discharges from these pits/ponds will continue to be regulated. Other existing and proposed sediment control structures to be used and/or left as permanent waters will have spillways that function to control discharge as well. It should also be noted that by replacing many of the open pit waters with meandering stream length (through mitigation), peak discharge flow rates will be somewhat reduced (increased lag time) over the current situation where pits and ponds get more direct runoff and react more quickly to heavy rainfall.

Many of the actions suggested to minimize adverse impacts to water quality are already proposed. Portions of existing flooded pits (ponds) will be utilized to dispose of material. Much of the material currently lying in piles un-reclaimed most likely came from the pit sites originally. Vigo Sunna will cap the entire site with sub-soil and topsoil in the reclamation phase of the project. The avoidance areas, while determined based on feasibility and economics of mining, still serve as a practicable step to minimize adverse impacts of the discharge. Vigo Sunna has chosen to avoid 100% of perennial streams, 37% of intermittent streams, 26% of ephemeral streams, 30% of wetlands, and 48% of existing open waters. The avoidance is not insignificant. As important as the quantity of resources avoided is the fact that many of these avoidance areas appear to have not been prior disturbed and consist of both headwater streams as well as main stem streams; another "appropriate and practicable" step to minimize potential adverse impacts.

As previously stated, the PN process is adequate. The digital application has adequate information on avoidance, minimization, and compensation. There is more than sufficient information provided.

Threatened and Endangered Species (Comments III.A, III.B., III.C.):
The US Fish and Wildlife Service's Bloomington Field Office has reviewed the information and provided comments on endangered species. As indicated in the response to USF&WS, the Indiana bat has been addressed through a PEP (Protection and Enhancement Plan) approved by IDNR and forwarded to USF&WS for review. The research on known maternity colonies did not reveal an opinion issued for an Indiana roadway project in Pike County in 2010 located over 11 miles away. However, in review of the findings of the referenced report, it was concluded that the roadway project, which runs through or along four maternities (defined within a 2.5 mile radius at each site), would not pose a significant threat to the Indiana bat. The final word on whether the Indiana bat will be adequately protected in regard to this mining project will come from USF&WS. In regard to the Copperbelly watersnake, there are no rebuttals to the information provided, only concerns over protection during the construction/operation of the mining. The referenced conservation agreement calls for minimization of impacts and enhancement of habitat during reclamation. The amount of existing wetlands on the project site is relatively small given the extent of the proposed mining site and largely fringe areas associated with ponds and deep open water pits. This species is more associated with shallow or floodplain wetlands. In any case, Vigo Sunna is avoiding a significant amount of the existing wetlands. The avoidance areas also consist of large blocks of land which could provide travel corridors between wetlands, uplands, and other suitable habitat. The proposed forested wetland mitigation will be associated with stream floodplains and will be shallow in nature. This will provide for more habitat than currently exists (this species is known to hibernate in forested wetlands and forested uplands). Also, it should be noted that T.H.E. Engineers personnel were on-site, typically a week at a time, from March through June in 2011. The Copperbelly watersnake is active (above ground) after April. With as many as six individuals, including several biologists, covering the entire site and delineating wetlands, not a single encounter with this species was made.

Cumulative Impacts (Comments IV.A. to IV.G.):
There is no doubt that mining has occurred in the Review Area for nearly a hundred years, and it has had some impact. The fact that LANDSAT and other tools available for an assessment did not show large expanses of scarred and disturbed areas is an indication of reclamation and/or natural succession. Data bases with meaningful information for pre-law mining are difficult to find, if they even exist. This makes evaluation of past mining impacts equally difficult. (It should be noted that sites like the Vigo Sunna site when viewed with aerial photography give an impression much different than if walked and viewed on-ground). Given the lack of empirical data regarding pre-law mining, statements are necessarily general in nature. The discussion on current mining in the area did not include several new mines that initiated production at the time data was being researched, in-active but permitted mines, and an inadequate outdated data base was used. However, the CIA has been revised and updated to include the

most current information available. Given the current economic and regulatory factors concerning coal mining, predicting future mining is totally subjective.

Impacts to downstream impaired streams has already been discussed in the response to II. Water Quality. The applicant has indicated how water quality will be monitored and reasons why reclamation of the site is expected to improve overall water quality. In commenting on impacts to soil pollution, the disposal of toxic material was the main emphasis. The expert cited in the comments apparently does agree there is likely acid mine drainage (associated with many of the elevated conductivity levels found) as a result of the previous mining in the area. That previous mining, as often reiterated, was pre-SMRCA. If not graded through re-mining, and the area properly reclaimed, does the expert believe the current situation will improve? The site has had decades to recover and yet we have these test results for existing stream conditions.

Cumulative impacts on ecological systems due to changes and landuse over the past century are subject to the availability of data and scope of how impacts from this proposed activity relate to the environment. We feel the current CIA adequately addresses how landuses in the Review Area has been altered within the timeframes for which data was found. The discussion, by its nature, has to use some "broad brush" categories for a meaningful dialog. Impacts on animal or plant communities from past conversions are in many cases more intuitive than related to numerical data. For example, conversion of forested lands from pre-settlement days to agriculture lands today has impacted animal and plant communities to a large degree, but is hard to quantify without data. However, the task at hand is how to quantify/qualify the Vigo Sunna project impact on the current ecological system today. Loss of wetlands is particularly addressed due to mandates and policies for their protection and continued existence. Comments were made that somewhat distort the statements made in the CIA. The loss of wetlands in Pike County, based on available data, is "relatively" minor when compared to the Indiana Department of Environmental Management's estimate of an 85% loss statewide. This project impacts a "negligible" amount of wetlands in comparison to the existing acreage found in the research conducted for this project. The application evaluates and discusses how the proposed restoration of wetlands will compensate for the wetlands proposed to be impacted. It should also be noted that the impacted wetlands are not the "natural" wetlands alluded to in the CLC comments, but rather are wetlands that have resulted from poor drainage conditions on the site that are the result of the lack of reclamation for the pre-SMRCA mining.
The cumulative impacts on threatened and endangered species have been adequately addressed as well. Current and projected changes in landuses, which will affect bat and snake habitat, are discussed, as well as the mitigation efforts to be accomplished in habitat restoration.

It should be noted that EPA had little comment regarding the CIA, other than requesting the applicant to update the status of current mining in the Review Area.

Mitigation (Comments V.A. to V.K):
In response to the generalization that mitigation was chosen over minimization, we again offer the following: avoidance of 100% of perennial streams, 37% of intermittent

streams, 26% of ephemeral streams, 30% of wetlands, and 48% of existing open waters (as a matter of clarification, Vigo Sunna is not excavating 29.95 acres of open waters to extract coal as stated). These are significant percentages as they relate to stream length and wetland acreage.

The goals of the proposed mitigation are clearly outlined in the mitigation plan, not only in the narrative but in the performance standards and measures for success. The mitigation plans are based on nationally accepted methodologies for natural stream design, and will restore streams in many of the reclaimed valley bottoms that are currently abandoned, un-reclaimed pits. The primary function of the current streams is generally conveyance of flow. Most convey biomass, which ends in deposition into open water pits. The macroinvertebrate survey performed indicates that even the larger receiving streams have nearly all taxa collected as being only those that are moderately to very pollution tolerant. Under Indiana metrics (family-level tolerance values), all streams surveyed were classified as moderately to severely impaired. Fish were found only in a few of the perennial streams surveyed (they will not be impacted); none in the intermittent streams surveyed. This is expected given that many of the intermittent streams drop sharply into the various pits left from the pre-law mining activity, thus eliminating migration. The EPA Rapid Bioassessment Protocol (RBP), while not designed specifically to assess function, was used and does provide some insight into the condition of the stream for habitat. Although this is a "visual physical habitat assessment", the RBP is a useful tool for assessing stream quality outside the use of comprehensive water chemistry for each stream. Mitigation is expected to provide an "ecological lift" through proper channel sizing (providing access to a stream's flood prone area; many are incised), lessening steep gradients (providing meanders and restoring streams in "new" reclaimed valley bottoms currently occupied by open pits), installation of habitat structure (presently lacking in most streams), and establishment of hard mast dominant riparian zones. Successful mitigation has been performed using this same methodology for other sites.

The stream mitigation does focus on the on-site impacts and the watershed approach taken is in the restoration of watersheds within the project site. Watershed restoration is driven by the need to re-establish continuity with avoidance areas upland and adjacent to mining areas. The proposed stream mitigation serves the same purpose. Basing the success of mitigation in the context of a HUC-11 serves no real purpose. In the context of a HUC-11, the results of an unsuccessful mitigation effort may prove to be insignificant as it relates to water quality, habitat restoration, etc. If we focus on the on-site stream and watershed restoration, then we have met our obligations to the needs of the "ecoregion...or other geographic area of interest". If water quality leaving the site is improved, the habitat restored or improved, and the area returned to a more pre-mining state utilizing proper reclamation, then surely this will benefit the larger watershed condition.

Once again the fact that many of the existing streams to be impacted have developed on un-reclaimed lands, from erosional activities, is not considered in the CLC comments. These "streams" are for the most part not naturally occurring streams, but

rather have developed their locations, alignment, and riparian zones during the decades after the pre-law mining activity occurred.

In response to the adaptive management and monitoring comments we offer, in addition to the response to EPA's, the following:
There are in fact clear success criteria for all years during the monitoring period, only additional requirements in years 3 and 5 concerning survey work. The results of monitoring, submitted each year, provide triggers for areas of concern: lower assessment scores for specific parameters, vegetation survival rates, changes in pH and conductivity readings, changes in survey results (longitudinal profiles), etc. In addition to the mitigation plan's measures for success, it should be noted that IDNR will continue to receive water quality data until bond release is approved. Those results will be used in evaluating the overall reclamation success (of which stream and wetland mitigation will be a large component). Suggesting that the applicant will not take any remedial actions unless required by the USACE is incorrect. As stated in the performance evaluations, the streams will be inspected frequently, and any maintenance needed to ensure stability and function will be performed. The statement "if remedial action is required by USACE" is meant to clearly identify their authority to make the decision for remedial actions and the number of corrective attempts allowed before an alternative approach is needed. There may be circumstances were success criteria is being hindered or not fully met but the USACE deems it insignificant to the overall success of the mitigation or they chose to allow more time before declaring an aspect of mitigation a failure. In Indiana, where the in-lieu fee option is not available for compensating for unsuccessful mitigation, the applicant has only the choice of remedial action or providing an off-site alternative. Clearly the applicant has a vested interest in providing successful on site mitigation.

The timeframe to monitor is typically five years from the time mitigation design requirements have been met, including planting of the riparian zone. Depending on the time of year, some streams will be in place for months before monitoring will commence. This is additional time in which streams will be functioning and evaluated for potential problem areas. The statement that a monitoring period of less than five years could occur, only hold true if the USACE agrees to the conditions, therefore it is not at the discretion of the applicant. If the USACE deems more time is needed to establish success, then that option is also available.

The hydrology calculations for wetlands were based on runoff in the watersheds in which they are located, in association to the intermittent streams. The hydrographs provided are specific to each wetland/watershed and show expected depths of flow. These flow depths provide an indication of how often over bank flow is expected for the intermittent stream (compared to its design). Precipitation, as listed separately from the watershed/stream overbank contribution, refers only to direct rainfall within the wetland area. The wetlands area is expected to retain water once the area is compacted and a clay soils liner is added and compacted. An assessment of the liner cannot be accomplished until the start of reclamation when the source of material is identified from stockpiles to be sourced for various uses in mitigation and final ground cover. Vigo Sunna believes suitable material will be available since wetlands have developed on-

site in similar situations (likely without the aid of proper compaction and introduction of a placed clay soil liner (i.e., Wetlands T, OO, QQ, SS, WW)).

T.H.E. and many regulatory agencies believe a lift in ecological functions can be related to structural formulas or measures (i.e., use of the RBP and HGM). For example, the function of a stream to provide for aquatic habitat is related to the substrate material, the availability of pools for dry periods, the sedimentation occurring, etc.; all of which are measurements used in RBP's. A lift in biological functions can only be quantified after mitigation has occurred and comparisons made to the proposed pre-disturbance conditions. However, from the fish and macroinvertebrate survey performed, the applicant believes the results indicate the site has already been adversely impacted and that mitigation will provide for a more natural and stable habitat for the introduction of more species that are not considered pollution tolerant.

The performance standards for the mitigation plan cover the physical aspects of the construction and functions of the streams and wetlands. The intent of the proposed mitigation is not to return this site to "pre-Project conditions" but return it to some condition closer to its original pre-mining state. If this is successful, then there will be no adverse impacts to downstream resources. The water quality measures for successful reclamation and mitigation, and any downstream impacts, will be determined primarily through the requirements of IDNR and the conditions of the mining permit through bond release. Some water quality measurements will be available through the required RBP assessments during the monitoring period.

As with all construction activities, including surface mining, there are temporary impacts that you cannot mitigate for until project completion or as construction phasing allows. Vigo Sunna will be undergoing reclamation as mining progresses through to the end of the expected project schedule. Any erosion or siltation of streams will be corrected as needed until ground cover is established. Erosion controls and sediment structures will be in place during the mining and reclamation phase and will remain until the regulatory requirements for the removal of temporary structures have been met.

In regard to open waters and mitigation, the creation of additional open waters to offset losses through filling many of the existing pits is the mitigation required. These waters are proposed to be several of the sediment basins required for mining that will be left as permanent impoundments to facilitate the landowners' long term plans for their property. A few will be final cut impoundments similar to the pits that exist now, although they will likely be smaller in size and will not have standing highwalls exposed. A separate mitigation plan is not needed for the creation of additional open waters or the removal of the temporary ones.

The hydrologic balance at this site was greatly disrupted when the initial pre-law mining occured, and should not be used as a basis for determining the effects resulting from this project. Given that the open pits found in the project area are typically ten to twenty feet in depth and the surface levels remain constant during dry periods, it appears that groundwater is supplying them to some degree. The pits, after they were initially abandoned, would have resulted in a drop in the groundwater table; only after

they were left to fill over time would any current "hydrological balance" have taken place. The current pool elevation may be an indication of groundwater levels. If that is the case, then the stream mitigation proposed at the pit locations may have the groundwater input component that was ignored in determining hydrology for viability in the design. The streams in the existing open water pit watersheds, both those that were undisturbed and those that developed over time, have had their natural connectivity to downstream resources disrupted as well...resulting in shorter stream reaches that feed these pools, often ending with abrupt drops. Many of the streams found within the pit watersheds have become incised as they have developed and tried to reach some point of equilibrium in establishing their channel bottom or met an erosion resistant material.

In summary, Vigo Sunna has made more than significant efforts to avoid and minimize impacts to resources and provide adequate compensation for those impacts that are unavoidable. The submitted baseline resource data, water quality results, biological survey, mitigation plans, and success/monitoring requirements of IDNR, USACE, and other agencies, have provided a clear understandable picture of the existing site conditions and a reasonable approach to leave the site in a better ecological condition than that which currently exists.

We appreciate the opportunity to respond to all the questions and comments. If you need further information, or have additional questions, please call me at 812-759-8454.

Sincerely,

Alex Messamore
Land Acquisition and Permits

Enclosures

CC: **David Carr, IDEM**
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